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TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT	Docket Number (Optional)

In re Application of: MARIE ANGELOPOULOS, ET AL.

Application No.: 09/346,353

Filed: 07/02/1999

For: METHOD OF FABRICATING PLASTICIZED AND CRYSTALLINE CONDUCTING POLYMERS AND PRECURSORS THEREOF.

The owner*, INTERNATIONAL BUSINESS MACHINES CORPORATION, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 to 156 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 5,969,024. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

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2. ☒ The undersigned is an attorney or agent of record.

Thomas A Beck — Signature — 11/28/2003 — Date

THOMAS A. BECK
Typed or printed name

12/09/2003 AOSMAN1 00000005 09346353
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☐ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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3. Terminal disclaimer with disclaimer fee

☐ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.

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4. Statement. The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional.

11/27/2003
Date

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Marie Angelopoulos, et al.
Serial Number	:	09/346,353
Filing Date	:	July 2, 1999
Examiner	:	T. Yoon
Group Art Unit	:	1714
For	:	METHODS OF FABRICATING PLASTICIZED, ANTIPLASTICIZED AND CRYSTALLINE CONDUCTING POLYMERS AND PRECURSORS THEREOF

The Honorable Assistant Commissioner of Patents
Post Office Box 1450
Alexandria, VA 22313-1450

In response to the Official Action dated July 28, 2003, please consider the following remarks with respect to the above-identified application.

Applicants enclose a Terminal Disclaimer with respect to Claims 1 and 2 of United States Patent 5,969,024.

The Examiner is respectfully requested to reconsider his rejection of Claim 24. In the Official Action, the Examiner states that Claim 24 recites: "... polyaniline monomer, said (sic) precursor and an oxidant."

In an amendment filed April 25, 2003, Applicant amended Claim 24 to read: "A method according to Claim1 wherein said admixture contains a polyaniline monomer, said additive and an oxidant." The substance of Claim 24 has been changed in this amendment to read: "...aniline monomer..." Based upon the misstatement of the elements in the Claim as presently written,

Applicants cannot address the Examiner's comments with respect to Claim 24 until clarified.

Claim 11 has been rejected under 35 U.S.C. 102(b) as anticipated or under 35 U.S.C. 103(a) as obvious over Han, (United States Patent 5,171,478), Ikkala et al. (United States Patent 5,520,852) or Cao et al.(United States Patent 5,232,631). The Examiner asserts that the cited art shows treatment of conducting polymers by plasticizers or solvents. The Examiner points to no teaching in these references to support the statement. There is no teaching of isotopic electrical conductivity in these references and the materials of these references are not made in the same way as applicants' materials. There is no suggestion in these references that isotopic electrical conductivity can exist in an electrically conductive polymer.

Claims 1-16, 20, 22, 23 and 25 have been rejected under under 35 USC 102(b) as anticipated by Han or, under 35 U.S.C. 103(a) as obvious over Han, (United States Patent 5,171,478). The Examiner comments in his rejection on Example 6 pointing to where Han teaches stretch orientation and contends that Han teaches the use of a plasticizer and a solvent.. The Examiner has totally ignored the rest of the limitations in Applicants' claims as rejected (1-16, 20, 22, 23 and 25) for which there is no teaching or suggestions in Han and Cao et al. Applicants claims distinguish over Han in that Applicants include limitations which are not found in Han which render the subject matter patentable.

Claims 1-16, 20, 22, 23 and 25 have also been rejected under 35 U.S.C. 102(b) as anticipated by Cao et al. or under 35 U.S.C. 103(a) as obvious over Cao et al. In each of the rejections cited above to Han and Cao, et al. respectively, the Examiner has stated:

> "The recited plasticizers of Han would not substantially dissolve polyanilines in the absence of a solvent, and would provide local mobility to polyanilines. The recited plasticizers of Han would not substantially dissolve in polyanilines [n]either.The recited plasticizers of Cao would not substantially dissolve polyanilines in the absence of a solvent, and would provide local mobility to polyanilines. The recited plasticizers of Cao et al. would not substantially dissolve in polyanilines."

In these statements the Examiner acknowledges that neither Han nor Cao et al.

teach using a solvent as claimed by applicants. He denies subsequently that this is what he meant.

The references are not anticipatory nor do they render the invention obvious. Their teachings are not complete for the purpose of properly rejecting the claims. The CAFC clearly made this point in *Paperless Accounting, Inc. v. Bay Area Rapid Transit Sys.*, 804 F.2d 659, 231 USPQ 649 (Fed. Cir. 1986) where it stated: "...reference must sufficiently describe the claimed invention to have placed the public in possession of it."

Based upon what the Examiner has stated on the record, the rejected claims cannot be anticipated by
Han or Cao et al. and thus the rejection of these claims under 35 U.S.C. 102(b) is improper. In the
statements made by the Examiner, he has *sua sponte* added information not taught in Han or Cao et
al., but which is taught by applicants, i.e., the use of a solvent. The Examiner is using applicants teaching to add to Han and Cao et al. This is improper. For the Examiner to properly make the assertions that he has on the record with respect to rejecting the Applicants' Claims, the Examiner must produce references to support his statements or an Affidavit as provided for under 37 C.F.R. 104(d)(2) for the Examiner to qualify himself as an expert to make these statements. The alternative for the Examiner is to withdraw the rejection.

The Examiner is requested to reconsider his rejection of the Claims in this case as anticipated by or obvious over United States Patent 4,983,322 to Elsenbaumer.

Elsenbaumer as a reference does not anticipate nor render obvious the present invention. Appellants' emphasize as has been stated, that their invention is a method of forming an admixture of solvent, an additive and a polymer which is either a precursor to an electrically conductive polymer or an electrically conductive polymer wherein the solvent is removed or partially removed and the additive provides local mobility to the polymer to allow the polymer chains to associate tightly with one another to achieve a high crystalline state.

Elsenbaumer discloses a method of using a solution to form a conducting polymer. He discloses polyaniline in combination with an oxidizing dopant. He illustrates the useful dopants by disclosing a list of compounds, a substantial number of which are halogen-containing compounds. His preferred dopants are chlorine and bromine-containing compounds with the most preferred dopant being $FeCl_3$.

Elsenbaumer uses his dopant to modify the electrical properties of the polymer. Appellants have emphasized in the specification (page 11) that the morphology of a polymer is very important in determining the polymer's physical, mechanical and electronic properties. Appellants specifically state that prior art polyaniline base films of the type disclosed by Elsenbaumer are amorphous and are depicted in figure 5(a) of the drawings.

Appellants submit that their invention is an improvement over the typical Elsenbaumer doped polymer. Appellants have obtained an unexpected benefit as a result of their discovery that the additive provides local mobility to the polymer to allow the polymer chains to associate tightly with one another to achieve a high crystalline state. Appellants have distinguished over the Elsenbaumer reference by virtue of the experimental data disclosed in the specification on page 12 as supported by Figure 5(a) of the drawings.

Appellants state at page 12 of the specification:

> Doping the amorphous polyaniline base films (those having structure shown in Figure 5a) with aqueous hydrochloric acid results in isotropic conductivity of 1S/cm. Such films are <u>not</u> crystalline. ...It should be noted that some level of crystallinity is lost during the doping process in these films." (Emphasis added)

Thus, Appellants have provided experimental data (under oath) that clearly establishes and supports the necessary difference in kind rather than degree of the oxidant that they use as opposed to the dopant of Elsenbaumer under similar conditions. The preferred $FeCl_3$. species in solution of Elsenbaumer provides the Cl^- ions analogous to the HCl used by Appellants in their comparative evaluation. The enhanced crystallinity (one of the objects of the invention) enhances the electrical properties and renders the Appellants' invention an unexpected improvement. Accordingly Claim 41 is patentable over Elsenbaumer.

The Examiner is erroneously interpreting the teaching of oxidant in Elsenbaumer to be the additive recited in Appellants' claims. Appellants' additive "provides local mobility to said polymer to allow said polymer to associate with one another to achieve a conductive state."

Elsenbaumer provides no teaching, suggestion, motivation for or incentive for this directly or inherently and this rejection should be withdrawn.

The Examiner is requested to grant a one month extension of time within which to file a response. A check in the amount of $110.00 is enclosed to cover the cost of the extension fee.

Respectfully submitted,

By: Thomas A. Beck

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I hereby certify that this paper is being deposited on the date indicated below with the U.S. Postal Service as First Class Mail addressed to Commissioner of Patents & Trademarks, Post Office Box 1450, Alexandria, VA 22313-1450

Signature: Thomas A. Beck

Name: Thomas A. Beck

Date: November 28, 2003

APPENDIX - CLAIMS

1. (Previously Presented) A method comprising forming an admixture of
a solvent,
an additive and
a polymer selected from the group consisting of a precursor to an electrically conductive polymer and an electrically conductive polymer,
said polymer being soluble in said solvent,
said polymer not being substantially soluble in said additive in the absence of said solvent;
said additive provides local mobility to said polymer to allow said polymer to associate with one another to achieve a crystalline state; and
removing or partly removing said solvent, substantially leaving said additive therein as remaining additive, said remaining additive provides local mobility to said polymer to achieve said crystalline state thereby comprising a polycrystalline material, said polycrystalline material is characterized by a degree of crystallinity regions and
a degree of amorphous regions, said degree of crystallinity regions and said degree of amorphous regions are selected by selecting the composition of said additive, and the amount of said additive.

2. (Previously Presented) A method according to claim 1, wherein said admixture is electrically conductive and has an isotropic electrical conductivity.

3. (Previously Presented) A method according to claim 1, wherein said additive is selected from the group consisting of plasticizers and diluents.

4. (Previously Presented) A method according to claim 1, wherein said additive is a plasticizer is selected from the group consisting of: Adipic acid plasticizers, Azelaic acid plasticizers, Benzoic acid plasticizers, Citric acid plasticizers, Dimer acid plasticizers, Epoxy plasticizers, Fumaric acid p1asticizers, Glycerol plasticizers, Isobutyrate p1asticizers, Lauric acid plasticizers, Linoleic acid plasticizers, Maleic acid p1asticizers, Sebacic acid p1asticizers, Stearic acid plasticizers, Succinic acid plasticizers, Sulfonic acid plasticizers, Terpentines, Terpentine plasticizers, Siloxanes, Polysiloxanes, Ethylene glyco1s, Polyethylene glycols, Polyesters, Sucrose p1asticizers, Mellitates, Myristic acid plasticizers, Oleic acid plasticizers, Palmitic acid plasticizers, Paraffin plasticizers, Phosphoric acid plasticizers, Phthalic acid plasticizers, Ricinoleic acid plasticizers, Tartaric acid plasticizers, Trimellitic acid plasticizers, Glycol plasticizers, Glycolates, Hydrocarbons, Phosphonic acid plasticizers, Polysilanes.

5. (Previously Presented) A method according to claim 1, wherein said polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylene vinylenes, polyparaphenylenes, polyanilines, polythiophenes, polyazines, polyfuranes, polypyrroles, polyselenophenes, poly-p-phenylene sulfides, polyacetylenes formed from soluble precursors, combinations thereof and blends thereof with other polymers and copolymers of the monomers thereof.

6. (Previously Presented) A method according to claim 1, wherein said, solvent when removed or partly removed forms a film which is further stretch oriented.

7. (Previously Presented) A method comprising:

forming a combination of a first material, a second material and a solvent:

said first material is selected from the group consisting of a precursors to an electrically conductive polymer and an electrically conductive polymer;

said second material being soluble in said solvent, said second material not being substantially soluble in said first material in the absence of said solvent.

8. (Previously Presented) A method according to claim 7, wherein said combination is electrically conductive and has a conductivity which is isotropic.

9. (Previously Presented) A method according to claim 7, wherein said polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylene vinylenes,
polythianophthenes, polyparaphenylenes, polyanilines, polythiophenes, polyazines, polyfuranes, polypyrroles, polyselenophenes, poly-p-phenylene sulfides, polyacetylenes formed from soluble precursors, combinations thereof and blends thereof with other polymers and copolymers of the monomers thereof.

10. (Previously Presented) A method according to claim 7, wherein said second material is se1ected from the group consisting of:
Adipic acid plasticizers, Azelaic acid plasticizers, Benzoic acid plasticizers, Citric acid plasticizers,
Dimer acid plasticizers, Epoxy plasticizers, Fumaric acid p1asticizers, Glycerol plasticizers, Isobutyrate p1asticizers, Lauric acid plasticizers, Linoleic acid plasticizers, Maleic acid p1asticizers,
Sebacic acid p1asticizers, Stearic acid plasticizers, Succinic acid plasticizers, Sulfonic acid plasticizers,
Terpentines, Terpentine p1asticizers, Siloxanes, Polysiloxanes, Ethylene glyco1s, Polyethylene glycols,
Polyesters, Sucrose p1asticizers, Mel1itates, Myristic acid plasticizers, Oleic acid plasticizers, Palmitic acid plasticizers, Paraffin plasticizers, Phosphoric acid plasticizers, Phthalic acid plasticizers,
Ricinoleic acid plasticizers, Tartaric acid plasticizers, Trimellitic acid plasticizers, Glycol plasticizers,
Glycolates, Hydrocarbons, Phosphonic acid plasticizers, Polysilanes.

11. (Previously Presented) A method comprising forming a polyaniline material having at least one crystal grain, said material having isotropic electrical collductivity.

12. (Previously Presented) A method comprising:
providing solution of polymers in a solvent;
said polymers are selected from the group consisting of precursors to electrica1ly conductive polymers and electrically conductive polymers;
providing mobility to said po1ymers to al1ow said polymers to associate with one another to achieve a crystal1ine state by adding a plasticizer to said so1vent;
said plasticizer being so1uble in said so1vent. said p1asticizer not being substantial1y soluble in said polymer in the absence of said so1vent.

13. (Previously Presented) A method according to claim 12, wherein said step of providing mobility is provided by adding an additive to said solution.

14. (Previously Presented) A method according to claim 13, wherein solid additive is selected from the group consisting of a plasticizer and a diluent.

15. (Previously Presented) A method according to claim 1, wherein said additive contains substituents which facilitates the miscibility of said polymer and said additive.

16. (Previously Presented) A method according to claim 1, wherein said additive disrupts aggregation of said polymer.

20. (Previously Presented) A method according to claim 1, wherein said additive deaggregates said polymer.

22. (Previously Presented) A method according to claim 1, wherein said solvent is extracted from said admixture by a technique selected from the group consisting of solvent extraction and evaporation.

23. (Previously Presented) A method according to claim 1, wherein said additive is first added to a solvent and thereafter an electrically conducting polyaniline is added which becomes neutralized
upon addition to said admixture.

24. (Previously Presented) A method according to claim 1, wherein said admixture contains a polyaniline monomer, said additive, and an oxidant.

25. (Previously Presented) A method according to Claim 1, wherein said additive includes a plasticization effect.

40. (Previously Presented) A method according to claim 1 wherein said additive is an oxidant.

41. (Previously Presented) A method according to claim 7 wherein said material is an oxidant.

42. (Previously Presented) A method according to claim 12 wherein said plasticizer is an oxidant.